ABSTRACT OF THE DISCLOSURE

Nucleic acid encoding four novel immunodeterminant protein antigens of M. bovis BCG, which is a vaccine strain for tuberculosis, have been isolated. These genes were isolated as immunoreactive recombinant clones from a genomic library of M. bovis BCG DNA, constructed in pBR322 vector, and screened with sera collected from tuberculosis patients. The BCG DNA insert of one of the recombinants, pMBB51A, which expressed an antigen of Mr 90 kD, was sequenced completely and an ORF encoding 761 amino acids encoding a protein of deduced molecular weight 79 kD, was identified. This gene was identified to encode a membrane bound, ion-motive ATPase of M. bovis BCG. The approach described here can be used to identify immunogens of mycobacteria. In addition, the well-characterized M. bovis BCG antigens can be used in the prevention, diagnosis and treatment of tuberculosis. The 79 kD antigen is also useful in the design of recombinant vaccines against different pathogens. The sequence of the 79 kD membrane-associated polypeptides also are useful for the development of specific PCR amplification based diagnostic procedures for the detection of mycobacteria. Also, the promoter of the 79 kD antigen is useful for expressing homologous and/or heterologous antigens in mycobacteria.